IN THE SPECIFICATION:

Please amend the specification as follows.

Please replace paragraph [0011] with the following replacement paragraph.

[0011] The balanced diode bridge topology, which is illustrated in FIGURE 1, utilizes an excitation source, which provides an alternating voltage to drive the electrodes of the CDS. Charge is alternately supplied to and removed from each of the electrodes through a diode bridge to and from capacitors, C_A and C_B. Each of the capacitors serves to supply current to one electrode while discharging current from the other. Thus any imbalance in the capacitance to ground of the two electrodes results in a voltage difference between the output pins of C_A and C_B.

Please replace paragraph [0015] with the following replacement paragraph.

[0015] Referring to FIGURE 3, a matched reference-capacitor bridge is shown. This circuit uses a common excitation source to drive both electrodes of the CDS through the summing nodes of a pair of fully-guarded charge amplifiers (guard voltage is on power supplies and common potentials). The charge amplifiers are built around two monolithic operational amplifiers and utilize a pair of matched, precision reference capacitors to establish their gain. The output of the charge amplifiers is fed into a high common-mode rejection difference amplifier. The output of the difference amplifier represents the difference capacitance in the sensor and is sent to a synchronous detector to recover a DC level corresponding to the diaphragm's position.

Please replace paragraph [0017] with the following replacement paragraph.

[0017] A need exists for an AFE topology which utilizes standard construction practices and inexpensive components while being relatively insensitive to temperature and humidity. This topology should feature excellent guarding to allow for ease of connection to a separate, heated sensor assembly and should allow for direct compensation of the sensor's offset.

Please replace paragraph [0019] with the following replacement paragraph.

[0019] One embodiment of the invention comprises an interface for a CDS utilizing a differencing current transformer and a charge amplifier. The primary windings of the

current transformer are coupled between an excitation voltage source and a pair of electrodes within the CDS. The currents passing through the primary windings generate magnetomotive force (MMF) of opposing polarity, so that a current proportional to the difference between the primary currents is induced in the secondary winding of the transformer. The secondary winding is coupled to the summing node of a charge amplifier, thus terminating the secondary of the transformer into a low impedance load. This low impedance termination is reflected back to the primary windings and appears as smaller impedance than the CDS's electrodes. Thus, the voltage presented to the electrodes is extremely close to the excitation voltage, and the excitation voltage becomes an excellent guard potential. Every circuit node associated with the transformer and charge amplifier are referenced, AC-wise, to the guard potential and shielded. This protects the transformer, charge amplifier, and any interconnects from stray capacitance and leakage currents.

Please replace paragraph [0021] with the following replacement paragraph.

[0021] The voltage signal recovered from the charge amplifier passes through the common-mode transformer and is fed into a synchronous detector which serves to generate a DC level corresponding to the CDS's applied pressure. The actual means of delivering the signal from the charge amp to the detector may vary, particularly in regard to gain stages.

Please replace paragraph [0037] with the following replacement paragraph.

[0037] In a preferred embodiment, a tightly coupled differencing current transformer is used to generate a differential current. This differential current is input to a low-impedance summing node of a charge amplifier that effectively integrates the differential current. The output of the charge amplifier is passed through a common-mode transformer which is coupled to the excitation voltage source in order to remove the guard potential (corresponding to the excitation voltage) from the output signal. A synchronous detector then converts the resulting signal to a DC level indicative of the differential capacitance of the sensor. This interface provides, e.g., reduced sensitivity to temperature and humidity, low source impedance at a guard source, excellent tracking between a guard potential and the sensor's excitation voltage, ease of construction, low cost and a means of trimming offset directly from the sensor.

Please replace paragraph [0041] with the following replacement paragraph.

[0041] Referring to FIGURE 5, a diagram illustrating the electrical structure of CDS 10 is shown. In this figure, it can be seen that the electrical components of interest in CDS 10 are capacitors 30 and 32. One of these capacitors consists of a circular electrode that interacts with the periphery of the diaphragm such that movements between the diaphragm and electrode appear as changes in the electrode's capacitance. The second electrode is circular and centered about the CDS's axis. It interacts with the center portion of the diaphragm and changes capacitance as the diaphragm flexes or moves. By subtracting the capacitance of the outermost electrode from that of the innermost electrode, the deflection the diaphragm can be perceived with little influence by common motion.

Please replace paragraph [0048] with the following replacement paragraph.

[0048] The electrical interface illustrated in FIGURE 6 operates essentially as follows. Excitation source 110 generates a sinusoidal AC excitation voltage. In this embodiment, excitation source 110 is a low-impedance source that provides a 5.8 volt (RMS) sinusoidal signal at 20kHz. Excitation source 110 drives the CDS through the primary windings of current transformer 111, provides a reference potential for charge amplifier 112 and current transformer 111, and is used to gate the synchronous detector 114. Excitation source 110 is also coupled to enclosure 115 and leads 116 and 117 to provide a guard voltage around the current transformer, the current amplifier, and the sensor leads. In addition, source 110 serves to excite common mode transformer 113 so that the excitation voltage can be removed from the final DC signal level and added to the power supply voltages designated B+ and B-.

Please replace paragraph [0051] with the following replacement paragraph.

[0051] The current transformer used in the interface is designed so that the two halves of the primary winding are identical. They have the same electrical characteristics, except that the flow of current through each half of the primary winding generates a magnetomotive force which is opposite in polarity to the magnetomotive force generated by the other half. If the capacitances of the two capacitors in CDS 10 are identical, they will have the same impedance to ground. Consequently, the same current will flow through each of

the two paths, and the magnetomotive forces induced into current transformer 111 will cancel each other. In this situation, no current is induced on the secondary winding of current transformer 111.

Please replace paragraph [0059] with the following replacement paragraph.

[0059] As mentioned above, the output of charge amplifier 112 includes the excitation voltage. This must be removed to determine the actual output of the charge amplifier. The output of the charge amplifier is therefore passed through one of the windings of common mode transformer 113. Another of the transformer's windings is connected between excitation voltage source 110 and ground. The EMF resulting from the coupling of the excitation voltage to common mode transformer 113 effectively cancels the excitation voltage out of the signal, leaving only the component of the signal resulting from the current induced on the secondary winding of current transformer 111. The common mode transformer also serves to superimpose the excitation voltage from source 110 unto the charge amplifier's power supply voltages, 'B+' and 'B-'. It should be noted that, in an alternative embodiment, the common mode transformer can be replaced by power supplying amplifiers and an amplifier featuring high common mode rejection.